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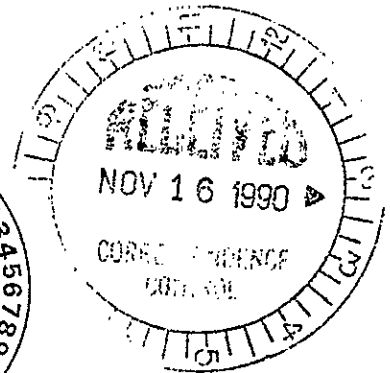
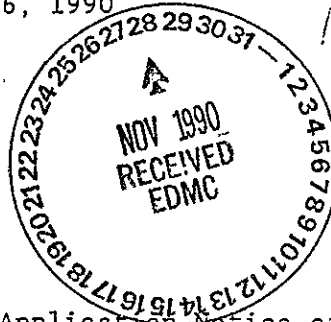
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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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November 6, 1990

Mr. Steven H. Wisness
Hanford Project Manager
U.S. Department of Energy
P.O. Box 550
Richland, WA 99352



Re: HWVP Clean Air Act Permit Application Notice of Deficiency

Dear Mr. Wisness:

This letter transmits Ecology's comments on the Hanford Waste Vitrification Plant Clean Air Act Permit Application. These comments are submitted in addition to the following:

- 1) Letter to Mr. R.D. Izatt from Mr. Teddy Le of Department of Ecology, May 25, 1990, and
- 2) Letter to Mr. R.D. Izatt from Mr. Al Conklin of Department of Health, October 2, 1990.

Ecology has reviewed the April 1990 Clean Air Act Permit Application, its references, and additional technical documents on the Hanford Waste Vitrification Plant (HWVP) proposed air emissions control system. Our review has consisted of an evaluation of the Best Available Control Technology (BACT) proposed for the HWVP. These reviews are required under the state Hazardous Waste Management Act (chapter 70.105 RCW), the state clean air act (chapter 70.94 RCW) and the federal clean air act's prevention of significant deterioration of air quality (PSD) program (40 CFR 52.21) as delegated to the Department of Ecology.

Based on information presented in the Clean Air Act Permit Application and in supporting technical documents, Ecology does not accept the proposed air emissions control system as Best Available Control Technology for gaseous emissions from the HWVP. The enclosure identifies specific deficiencies in the USDOE/WHC BACT analysis, and provides recommendations for their correction.

Your response should contain responses to all of the above referenced letters and should be submitted to both the Department of Ecology and the Department of Health no later than January 15, 1991. Technical inquiries regarding this

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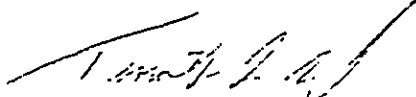
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Mr. Steven H. Wisness
November 6, 1990
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issue should be directed to Ecology's HWVP Unit Manager, Mr. Mike Gordon at (206)438-7024, and Mr. Al Conklin of the Department of Health at (206)586-0254.

Sincerely,



Timothy L. Nord
Hanford Project Manager

Enclosure

cc: Cliff Clark
Al Conklin
Sherri Cross
Dan Duncan
Joe LaRue
Mike Landon
Jerry Leitch
T.B. Veneziano (AR)

DEPARTMENT OF ECOLOGY
NOTICE OF DEFICIENCY FOR THE
HANFORD WASTE VITRIFICATION PLANT
CLEAN AIR ACT PERMIT APPLICATION
November 6, 1990

The following comments reference the April 1990 draft of the Hanford Waste Vitrification Plant Clean Air Act Permit Application.

- 1 Deficiency: Table 4-1 lists 16 air pollutants, their PSD thresholds, and expected emission rates for four of the pollutants.

Requirement: Revise table 4-1 to include estimated maximum emission rates for all 16 pollutants. Unspecified emission limits will be expected to be zero.

- 2 Deficiency: Section 6.1 states that the "inclusion of a BACT analysis in this permit application is required only for those regulated pollutants exceeding (or approximating) their PSD significance levels." Based on the lack of information regarding the nature of organic constituents expected in the melter feed, and on the estimate that total organic carbon may account for as much as 11% of the total waste oxides, the clean air act permit application does not provide sufficient justification for omitting control equipment for removal of volatile organics from plant emissions.

Requirement: Until USDOE/WHC can specifically identify the organic compounds expected in the melter feed and can demonstrate that volatile organics will not be present in the offgas, the offgas treatment system must include an activated carbon adsorption system or some equivalent control system. In addition to removing volatile organics, this system may also provide additional control of iodine releases. In the event that organics are later shown to be absent from the offgas, the carbon adsorption system may be bypassed.

- 3 Deficiency: Section 6.4.5 states that, "the addition of incremental oxides of nitrogen removal equipment is not considered justified." This conclusion is based, in part, on the inaccurate assertion that "the melter will contain oxides of nitrogen at a relatively constant, low concentration. The process vessel ventilation source...will be sporadic, flowing at a relatively high concentration for a small fraction of the time... The resulting wide range and rapidly varying operating conditions will significantly reduce performance..."

According to material balance tables in the HWVP Preliminary Safety Analysis Report (PSAR), the melter off gas accounts for approximately two-thirds of the annual NOx emission. This stream could be amenable to NOx abatement from selective catalytic reduction or some equivalent control system.

NOx control equipment is either being used or proposed for use at other vitrification facilities including West Valley, Tokai (in Japan), and Sellafield (in U.K.). This fact indicates that NOx control equipment is available for use in vitrification technology with acceptable efficiencies.

Requirement: To minimize the impact on photochemical air pollution and acid rain, and to reduce the adverse affects of NOx on other control equipment (e.g., activated carbon adsorption, see comment # 2), NOx control equipment, such as selective catalytic reduction, should be added to the HWVP melter off-gas system. Ecology also recommends the addition of caustic to the melter offgas submerged bed scrubber to further reduce emissions of NOx, other acid gasses, and carbon-14. USDOE/WHC should further study the feasibility of controlling NOx emissions from the decontamination waste transfer tank (DWTT) and the slurry receipt and adjustment tank (SRAT), either by combining these streams with the melter off-gas system, or applying separate NOx controls to the process vessel vent system (e.g., adding caustic to the PVV submerged bed scrubber).

- 4 Deficiency: Section 7.2.2.1 states that "no proven iodine control alternatives were found to be applicable, and no further analysis of iodine controls was performed." This conclusion contradicts the referenced PNL study (HWVP Iodine Trap Evaluation, Burger and Scheele, August 1989) which states that, although additional development would be required, "two methods remain which do appear attractive, a liquid scrubber using sodium or potassium hydroxide ... and silver impregnated solids."

Requirement: Iodine removal equipment has been widely applied to other nuclear facilities. Thus Ecology finds that iodine removal technology is available, and should be more thoroughly evaluated at concentrations approaching those anticipated from HWVP. Unless USDOE/WHC can clearly document that available technologies (carbon adsorption, silver impregnated solids, and caustic scrubbers) are incapable of efficiently removing iodine from the melter offgas, some system for iodine removal is indicated. Thus, Ecology's initial BACT determination is that iodine removal is required.

As stated in the October 2, 1990, letter from Department of Health, additional information regarding iodine removal technologies is required to formally complete the BACT analysis for HWVP. Ecology's final determination on the requirement for iodine removal is contingent on receipt and review of that additional information. A final BACT/BARCT determination on iodine removal will be made jointly by the Departments of Ecology and Health following receipt of information on energy, environmental and health impacts from the use of carbon, silver impregnated solids, caustic scrubbers, and other available technologies for iodine removal.

- 5 Deficiency: Table C-2 lists abatement equipment decontamination factors used to calculate emission levels from the Melter Offgas and Process Vessel Ventilation systems. Decontamination factors for cadmium, lead, ruthenium, selenium, and technetium are not well documented in supporting information provided to Ecology. Footnote # 4 also states that "Ru adsorber provides no abatement of particulate Ru, which is the form expected." According to a paper presented at Waste Management '88 (T. Tsuboya and N. Tsunoda, "The Japanese Vitrification Program"), silica gel may be used to remove gaseous ruthenium expected in vitrification plant offgas. It is not clear why ruthenium is not expected to be in the gaseous form from the HWVP melter, and why a ruthenium adsorber was omitted from the BACT analysis.

Requirement: Provide data to support the decontamination factors listed in table C-2 for cadmium, lead, ruthenium, selenium, and technetium. In addition, provide a more complete justification for the omission of a ruthenium adsorber from the melter offgas system.

- 6 Deficiency: Information on equipment for monitoring NOx emissions is not provided in the permit application.

Requirement: Offgas monitoring for NOx will be required, and will be identified in the initial air permit. Additional information specifying monitoring equipment, frequency, and span must be provided no later than 3 years prior to operation.

- 7 Deficiency: HEPA filter operation parameters are not specified in the permit application.

Requirement: Specify the operating pressure range (including maximum pressure drop) for HEPA filters, and the conditions which would dictate their replacement.

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